3.21 Toxic/Hazardous Materials

This section describes impacts related to the presence and/or use of hazardous, toxic, and radiological waste (HTRW) within the area of analysis for the Proposed Action and alternatives.

3.21.1 Area of Analysis

The area of analysis includes the area in the immediate vicinity of Keno, J. C. Boyle, Copco 1, Copco 2, and Iron Gate Dams, including their associated reservoirs, and areas identified as construction/demolition and staging areas for the alternatives. This section also addresses impacts related to HTRW at a program level within the Klamath Basin Restoration Agreement (KBRA) area of analysis because specific locations of potential construction sites have not been identified.

3.21.2 Regulatory Framework

Hazardous materials, substances, and waste within the area of analysis are regulated by several federal, state, and local laws and policies, which are listed below.

3.21.2.1 Federal Authorities Regulations

- Resource Conservation and Recovery Act (42 USC 6901 et seq.)
- Hazardous Materials Transportation Act (49 USC Section 1801 et seq.)
- Clean Water Act (33 USC 1251 et seq.)
- Comprehensive Environmental Response Compensation and Liability Act and Superfund Amendment Reauthorization Act (SARA) (43 USC 9601 et seq.)
- 40 CFR 260-279 Federal Regulations on hazardous waste management
- 40 CFR 301 et seq. Emergency Planning and Community Right to Know Act
- Toxic Substances Control Act (15 USC 2601 et seq.)

3.21.2.2 State Authorities and Regulations

- California Hazardous Waste Control Law (California Health and Safety Code [HSC] Section 25501 et seq.)
- Carpenter-Presley-Tanner Hazardous Substances Account Act (HSC Section 25300 et seq.)
- Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (HSC Section 25404 et seq.)
- Solid Waste Management (Oregon Revised Statute [ORS] 459, and Oregon Administrative Rule [OAR] 340-093)
- Hazardous Waste and Hazardous Materials (ORS 465 and 466, and OAR 340 Divisions 100 to 106, 109, 111, 113, 120, 124, 135, and 142)
- General Environmental Quality (ORS 468, 468a, and 468b)

3.21.3 Affected Environment/Environmental Setting

3.21.3.1 Sites with Potential HTRW Concerns

As described in Section 3.21.4.1, Effects Determination Methods, a database search was conducted by Environmental Data Resources (EDR) of sites within a 1-mile radius of the area of analysis where there is potential concern for the presence of HTRW (EDR 2010a and 2010b). Potential HTRW sites included spill sites, sites with leaking underground storage tanks, emergency response to releases sites, brownfields, hazardous material incidents, and voluntary cleanup sites, among others. No recorded reviews or site inspections were performed on these sites identified from the database searches. Four potential HTRW sites within the area of analysis were identified by the EDR search. Two of the listings only indicated the presence of underground and aboveground storage tanks at the Copco Lake Store and the "Pacific Power – Iron Gate," respectively; but there was no evidence of spills. One listing referenced health limit exceedences in water samples from the Copco Lake Municipal Water Company for radium-228, arsenic (total), bromodichloromethane, dichloroacetic acid, and total haloacetic acids between 2004 and 2006, and for aluminum in water samples collected since 2004. The remaining listing resulted from a minor spill which was remediated and is no longer a site of concern, as described below:

- **21630 Copco Road (Map Location #2 – 21630 Copco Road, Hornbrook, CA)**. This site, which is the Copco 2 powerhouse, had a spill of non-polychlorinated biphenyl (PCB) transformer oil and is listed in the California Hazardous Material Incident Reporting System and the Emergency Response Notification System databases. According to the EDR report, in 1999, a bushing failed at a transformer adjacent to the Klamath River releasing transformer oil. Most of the non-PCB transformer oil was contained, and less than 1 quart made it to the Klamath River. According to PacifiCorp, Siskiyou County conducted the site review and approval of the transformer fire spill cleanup (EDR 2010a).

In addition to the four sites described above, the EDR database research identified 162 "orphan sites," which are those sites that could not be mapped or "geocoded" due to inadequate address information, along the two corridors of the Klamath River. After further research, seven orphan sites were identified within the area of analysis. Two of these seven were listings of National Pollutant Discharge Elimination System-permitted facilities and a Waste Discharge System facility, which do not present concerns related to HTRW. Another two of the listings indicated the presence of underground and aboveground storage tanks at Iron Gate Salmon & Steelhead and J. C. Boyle Power Plant, but no database-documented evidence of spills. One site, listed on the Emergency Response Notification System, is the Copco 2 powerhouse minor spill described above. The remaining two sites were listed on the California Facility and Manifest Database and the leaking underground storage tank (LUST) databases. No additional information was available on the Regional Water Quality Control Board Geotracker database or the California Department of Toxic Substances Control Envirostor database regarding these sites:

- **DFG Iron Gate Fish Hatchery (Hornbrook, CA).** This site is listed in the California Facility and Manifest Database (HAZNET). No additional information on the presence of HTRW at the site is available.
- **Weyerhaeuser Co., Klamath Mill Site (Highway 66 West, Klamath Falls, OR).** This site is listed in the underground storage tank (UST) and LUST databases. No additional information on the presence of HTRW at the site is available.

In addition to the EDR database search, the following items were found from other sources:

- In 2009, at the Copco 1 Warehouse, soil known to be contaminated by petroleum products was removed from a former lube rack area. The final report and site cleanup were approved by a letter from Siskiyou County in 2010 (personal communication with R. Dean, Siskiyou County, March 30, 2011).
- In 2009, a former landfill site at Copco 2 Dam was removed per Siskiyou County review and approval (personal communication with R. Dean, Siskiyou County, March 30, 2011).
- Copco 2 Dam's fueling facility has two aboveground storage tanks (1,000-gallon gasoline and 500-gallon diesel). No known spills or cleanups occurred at this facility.

3.21.3.2 HTRW at PacifiCorp Dams and Associated Facilities

The existing dams and hydroelectric facilities have components that contain potentially hazardous materials. This analysis assumes that all painted structures, equipment, and metalwork in the project area contain heavy metals, such as lead. Window caulking, electrical wiring and components, building materials, and some coatings may contain asbestos. Tests for lead paint and asbestos are usually performed to characterize material and equipment prior to equipment removal and structure demolition. As a result, no testing or reporting has been performed since the structures and materials are still in place and the equipment is still in operation. In addition, surrounding soils may contain heavy metal contaminants where coatings have flaked off of the painted structures, equipment, and metalwork.

In the mid-1980s, PacifiCorp tested all of its accessible oil-filled electrical equipment for the presence of PCB materials (personal communication with T. Hepler, Reclamation, December 23, 2010.). All accessible power generation equipment was certified by PacifiCorp as "PCBs-free", if it had concentrations of PCBs that were less than 50 parts per million. Certain closed systems, such as transformer bushings, cannot be tested until time of disposal. Thus, small quantities of PCBs may be present in hydraulic fluids, soils, and in older fluorescent light fixtures. Old light switches may contain mercury. Other hazardous materials at the dams and hydroelectric facilities may include transformers, batteries, bushings, oil storage tanks, bearing and hydraulic control system oils, lead bearings, and creosote-treated wood in the wood-stave penstocks.

It is unlikely that the dams themselves include any naturally hazardous materials such as schist, which could contain asbestos-like fibers. The closest soil formation in the area with schist is the Franciscan formation, which contains sandstone and blue schist. However, this formation is not at the dam locations, but is 40 miles downstream of the Klamath River in a completely different geomorphic province. It is unlikely that materials from this formation were used in the construction of the dams. However, based on the age of the structures at Iron Gate and J.C. Boyle Dams, the concrete in the structures may contain fly ash, which has raised concerns about the presence of mercury or other toxic substances. However, the United States Environmental Protection Agency (USEPA) recognizes the beneficial uses of fly ash and considers it safe when it is encapsulated in concrete or other building materials (USEPA 2011).

As part of the Secretarial Determination studies, reservoir sediment cores are being analyzed for a suite of inorganic and organic contaminants to assess the potential environmental and human health impacts of sediment release. Sediment contaminant levels in samples from the Klamath River were collected at multiple sites and at various sediment depths per site in J.C. Boyle Reservoir, Copco Reservoir, Iron Gate Reservoir, and the Klamath River Estuary, for a total of 77 samples (Department of the Interior (DOI) 2010). To date, the sediment evaluation process has followed screening protocols of the Sediment Evaluation Framework (SEF)[1] for the Pacific Northwest, issued in 2009 by the interagency Regional SEF Team.

Thus far, the SEF sediment chemistry screening process indicates that the sediment deposits in the Klamath River reservoirs are not highly contaminated. There are few positive exceedances of relevant screening values, and therefore little positive indication that substantial aquatic toxicity, or ecological or human health risk, would likely result from exposure to the sediments. For the few compounds that positively exceeded relevant screening levels, as well as the greater number of compounds for which it could not be determined whether screening levels were exceeded, further evaluations must be conducted before conclusions about the potential for contaminant-related impacts and risks can be reached. This includes direct laboratory testing of the sediments to assess their toxicity to sensitive aquatic organisms (i.e., toxicity bioassays), and direct laboratory testing of the sediments for the bioavailability of the contaminants present (i.e., whether contaminants are available to be taken up by organisms directly exposed to the sediments for extended periods of time, or bioaccumulation assays). Each of these biological testing approaches have been conducted on the same reservoir sediment samples evaluated in the chemistry screening described above. The results of this biological testing are pending.

[1] The SEF is a regional guidance document that provides a framework for the assessment and characterization of freshwater and marine sediments in Idaho, Oregon, and Washington (Regional Sediment Evaluation Team 2009).

As shown in Figure 3.21-1, the closest existing schools to the area of analysis are Hornbrook Elementary School, Willow Creek Elementary School, Bogus Elementary School, and Keno Elementary. All four of these schools are located more than a mile away from the dam facilities. Keno Elementary is 0.25 miles from the Keno Impoundment at its nearest point.

3.21.3.3 Hazardous Waste Disposal Facilities

Any hazardous waste generated from the demolition of the dams and associated hydroelectric facilities would need to be disposed of in designated hazardous waste landfills. This would include treated wood waste, PCBs present in transformers and other electrical equipment, asbestos-containing materials in building materials, fuels and oils, and soils or other material contaminated with lead from the use of lead-based paint.

The Anderson Landfill in Anderson, California, located 122 miles from Hornbrook, California, is permitted to accept hazardous waste, including treated wood waste. The Anderson Landfill had an estimated remaining capacity of 4,925,975 cubic yards (70 percent of capacity remaining) in 2000, with an anticipated closure date of 2055.

3.21.4 Environmental Consequences/Environmental Impacts

3.21.4.1 Effects Determination Methods

To evaluate whether the construction/demolition areas contain existing hazardous materials, EDR conducted a search of regulatory databases to identify facilities within the vicinity of the dams where hazardous materials are known to be present based on regulatory records of investigation and/or remediation conducted under the oversight of federal, state, or local agencies. The area of analysis was divided into three corridors along the Klamath River within Oregon and California (EDR 2010a, 2010b, and 2011). The first corridor starts where Keno Impoundment and Lake Ewauna meet Oregon and follows approximately 18 miles of the Klamath River within south central Oregon to the Keno Dam in Keno, Oregon. The second corridor includes the northeastern point of the J.C. Boyle Reservoir to the J.C. Boyle Powerhouse, and covers approximately 8 miles of the Klamath River within south central Oregon. The third corridor study includes the northeastern point of the Copco 1 Reservoir, Copco 1 Dam, Copco 2 Dam, Iron Gate Reservoir, and Iron Gate Dam, and covers approximately 12.5 miles of the Klamath River within northern California. A 2-mile buffer was added for the records research to account for groundwater migration and contaminant transport and to account for the width of the reservoirs. Figures 3.21-2, 3.21-3, and 3.21-4 show the area searched and an overview of the identified HTRW sites.

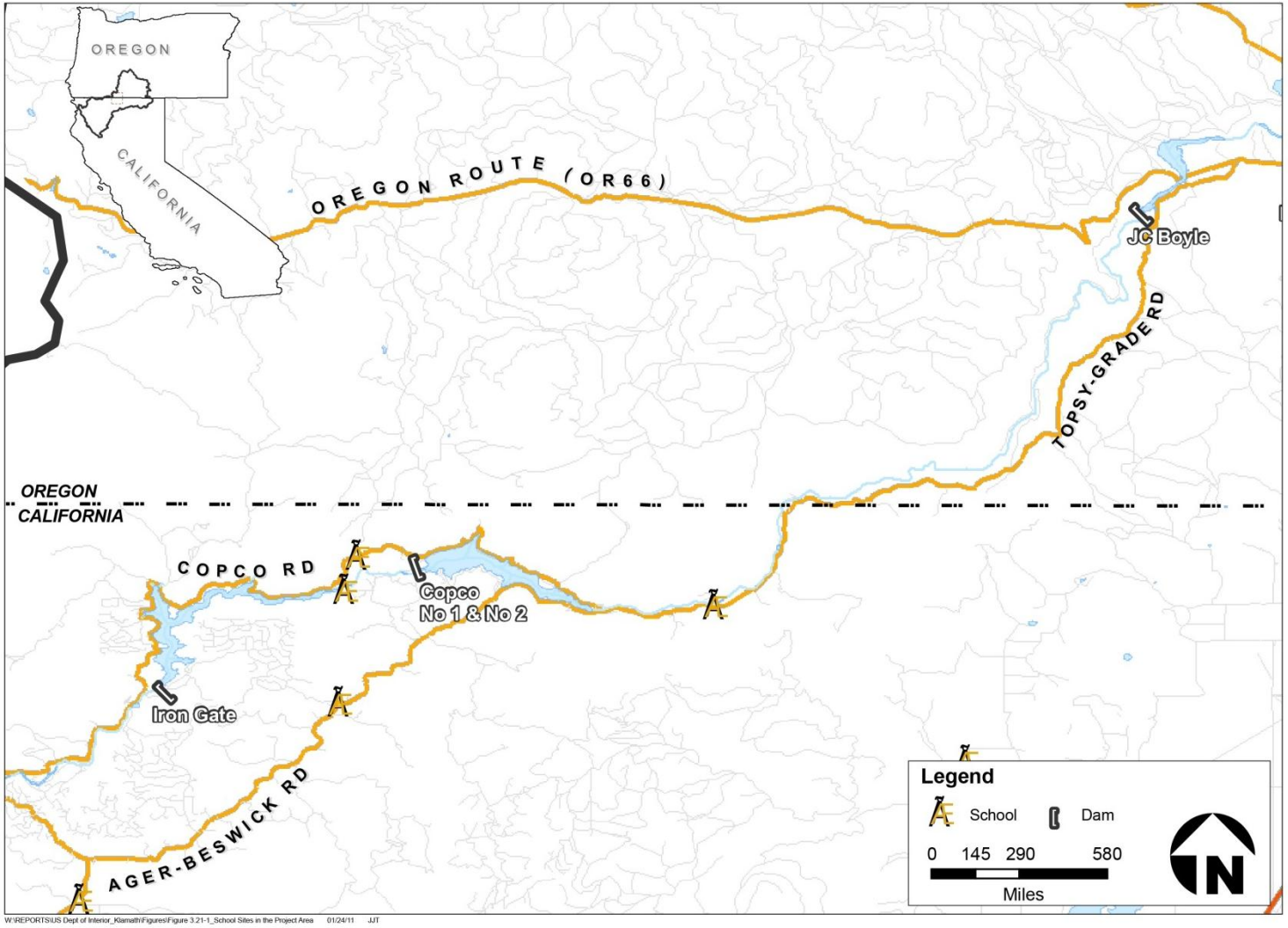

Figure 3.21-1. School Sites in the Project Area

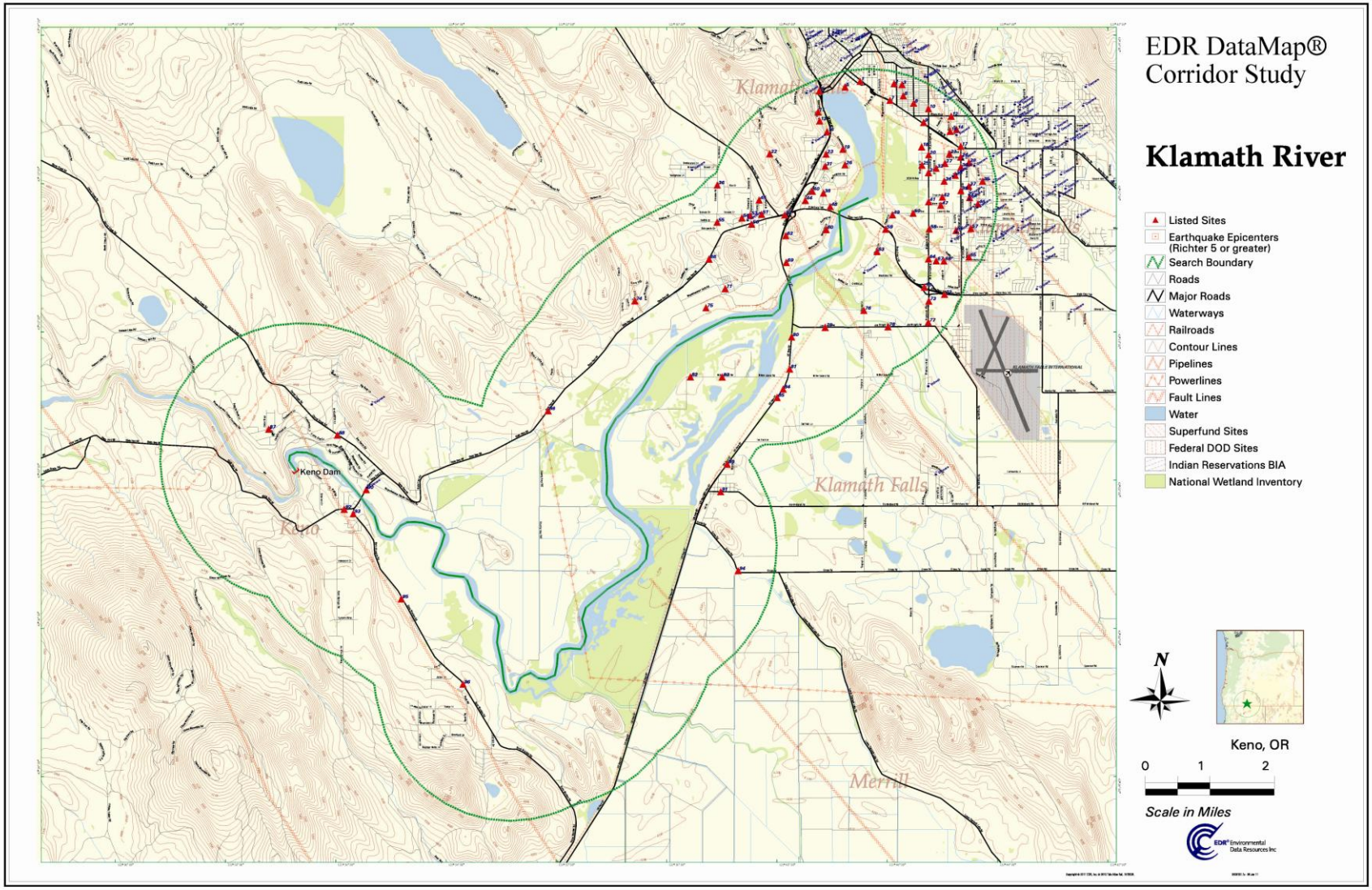

Figure 3.21-2. HTRW Sites, Keno Dam and Reservoir

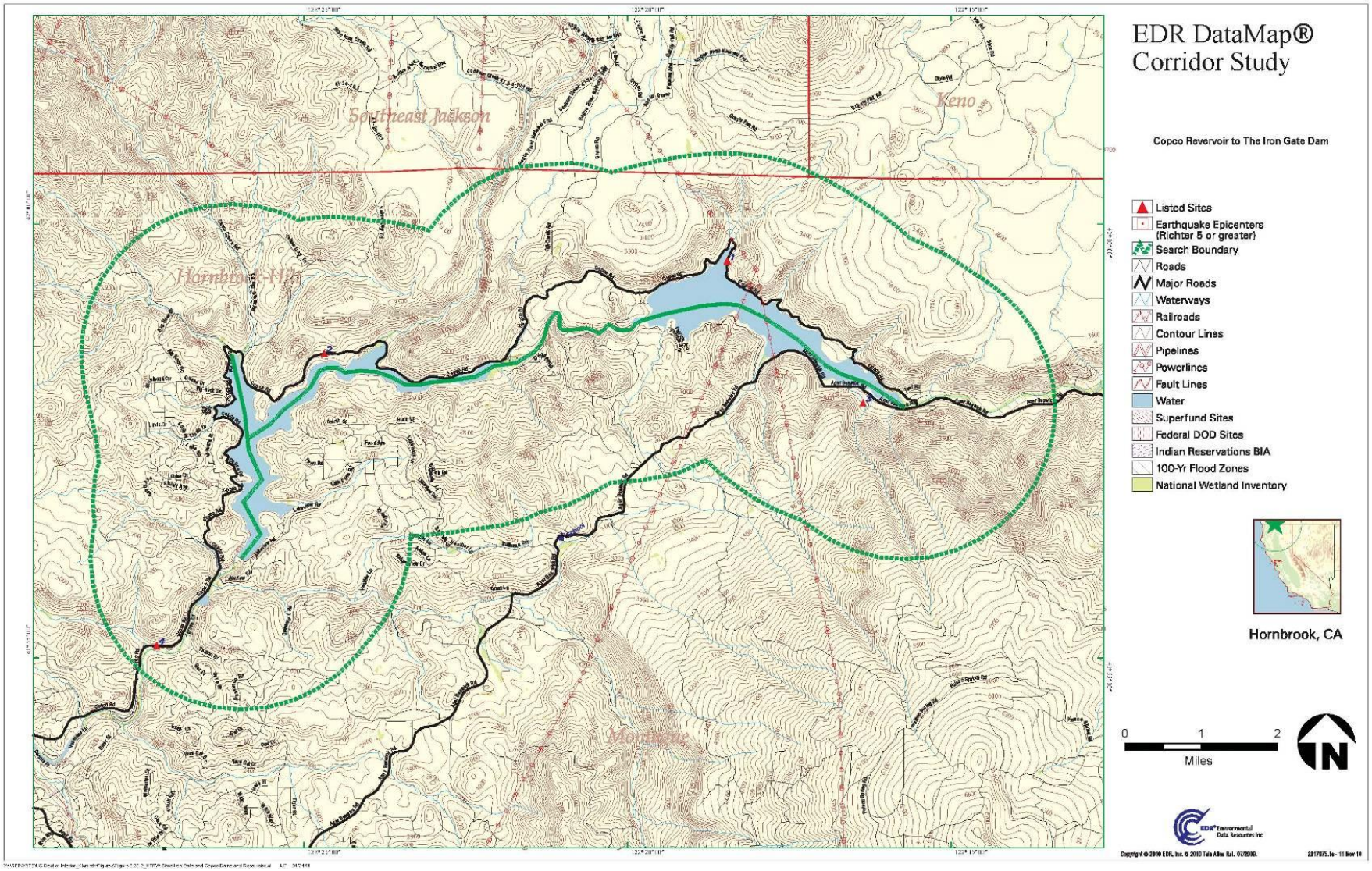

Figure 3.21-3. HTRW Sites, Iron Gate and Copco Dams and Reservoirs

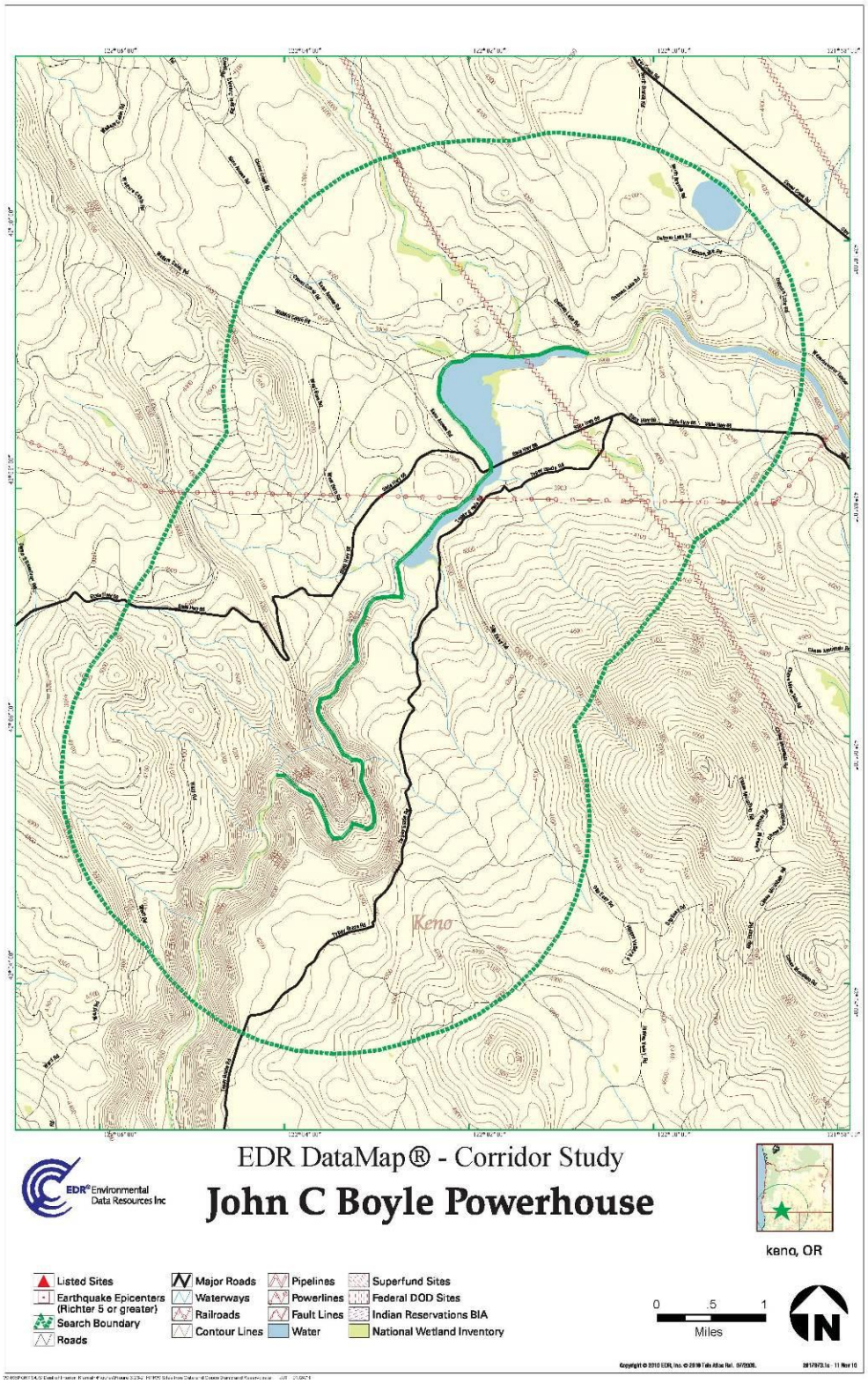

Figure 3.21-4. HTRW Sites, J.C. Boyle Dam and Reservoir

Database information on these sites was augmented by searching online databases of regulatory agencies to verify the closure status of sites or obtain information on the type and extent of contamination at the sites. Information on hazardous materials associated with existing dam components was obtained from PacifiCorp.

Although the databases search by EDR are updated regularly, there may be contaminated sites that have not yet been identified and are absent from the databases. A complete Phase I Environmental Site Assessment was not performed because such investigations tend to remain valid for only 6 months and, as a result, are typically done after selection of the preferred alternative and closer to construction.

3.21.4.2 Significance Criteria

For the purposes of this Environmental Impact Statement/Environmental Impact Report (EIS/EIR), impacts related to HTRW would be significant if an alternative would result in any of the following:

- Creation of a significant hazard to the public or the environment through the transport, use, or disposal of hazardous materials;
- Creation of a significant hazard to the public or the environment through reasonably foreseeable accident conditions involving the release of hazardous materials into the environment;
- Generate hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; or
- Be located on a site which is included on a list of hazardous materials sites and, as a result, create a significant hazard to the public or the environment.

3.21.4.3 Effects Determinations

The following sections contain descriptions of the hazardous waste effects that would occur under each alternative.

There are no schools located within one quarter mile of construction areas; the nearest schools are located more than 3 miles away. Therefore, there would be no impacts related to emissions or handling hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. For this reason, the third significance criterion listed above does not apply to any of the alternatives and will not be considered further in this analysis.

To assess hazardous waste effects that could occur under each alternative, the analysis focused on potential hazards that could be encountered during deconstruction of the dam facilities, construction of fish passageways, and resultant restoration of the deconstruction/construction areas. The potential resulting risk to the public from these activities are described qualitatively. To identify potential hazards to the public from the alternatives, the inventory of existing hazardous materials at the dams and associated facilities was reviewed to assess potential risks associated with their deconstruction and removal. In addition, the EDR database search was used to identify known hazardous

material sites within the area of analysis that could be disturbed during deconstruction/ construction activities.

According to the information provided in the EDR search, construction areas for the Proposed Action and the other action alternatives are not located near sites where hazardous materials are known to occur. Since the EDR report identified a very small number of sites of concern located within one mile of the construction areas, the potential for hazards related to encountering contaminated soil or groundwater from these sites is low, however, this risk is discussed below.

Alternative 1: No Action/No Project

The No Action/No Project Alternative could create a hazard to the public or the environment through the handling, transport and disposal of HTRW. Under the No Action/No Project Alternative, no new construction or demolition would occur at the four Klamath dams so existing known hazardous sites would not be disturbed and would not pose a threat to public safety. Hazardous components of the existing dams, such as transformers, bushings, tanks, lead bearings, creosote-wood staves, and asbestos-based insulating products, would not be disturbed. Any hazardous waste generated or used during operation of the existing dams and hydroelectric facilities and during construction of the Ongoing Restoration Actions (e.g., at Wood Creek, Barnes, etc.) would be the same as under existing conditions. **Therefore, there would be no change from existing conditions related to HTRW under the No Action/No Project Alternative.**

Alternative 2: Full Facilities Removal of Four Dams (the Proposed Action)

The Proposed Action involves removal of all appurtenant features, with the exception of buried features, at the Four Facilities.

Facility deconstruction could occur on sites included on a list of hazardous materials sites and, as a result, create a significant hazard to the public or the environment. As summarized in Section 3.21.3.1 , the EDR database search identified two listed hazardous sites within one mile of the area of analysis. One site involved a spill of non-PCB transformer oil on Copco Road in 1999, but less than one quart reached the Klamath River. Siskiyou County conducted the site review and approval of the transformer fire spill cleanup. The other reported site was the Copco Lake Municipal Water Company reporting health limit exceedances of radium-228, arsenic (total), bromodichloromethane, dichloroacetic acid, and total haloacetic acids in 2004 and 2006 and detections of aluminum exceeding both the health and legal limits since 2004. Due to the distance of these two sites from the PacifiCorp facilities and construction areas, there is no potential to encounter HTRW from these two sites during construction and demolition activities under all of the action alternatives. The EDR database search did not identify any other reported spills within the area of analysis; however, the databases searched by EDR are constantly being updated and require reporting by others to be complete. As such, there is the possibility that an unknown (i.e., unreported and unlisted) contaminated site could be encountered. **There would be no change from existing conditions related to posing a hazardous chemical risk from materials currently at the dam sites.**

Facility deconstruction could create a significant hazard to the public or the environment through the transport, use, or disposal of HTRW during construction. Hydroelectric facilities operate using a variety of chemicals (e.g., lubricants, transformer oils, bearing oils, etc.) that would be removed under decommissioning. The presence of a UST at the J.C. Boyle Power Plant does not indicate a spill; however, care should be exercised when conducting work in these areas. As part of the decommissioning plan, prior to initiation of deconstruction or construction activities, the contractor will be required to prepare a Hazardous Material Management Plan (HMMP) for review by the Dam Removal Entity in case contaminated media are encountered. The purpose of this plan is to have an established plan of action if known or unknown hazardous materials (e.g., soil or groundwater contamination, asbestos and hazardous coatings requiring abatement, etc.) are encountered during construction and to establish best management practices (BMPs) to reduce the potential for exposure to hazardous wastes. The HMMP will contain the following:

- Definition of a protocol for proper handling, transport, and disposal of hazardous materials (e.g., creosote-treated wood staves) if they are encountered during construction.
- Definition of a protocol for proper emergency procedures and handling, transport, and disposal of hazardous materials if an accidental spill occurs during construction.
- Establishment of BMPs to reduce the potential for spills of HTRW. Typical BMPs to reduce the potential for spills may include, but are not limited to:
    - Having a spill prevention and control plan with a designated supervisor to oversee and enforce proper spill prevention measures;
    - Providing spill response and prevention education for employees and subcontractors;
    - Stocking appropriate clean-up materials onsite near material storage, unloading and use areas;
    - Designating hazardous waste storage areas away from storm drains or watercourses;
    - Minimizing production or generation of hazardous materials on-site or substituting chemicals used on-site (e.g., herbicides during restoration) with less hazardous chemicals;
    - Designating areas for construction vehicle and equipment maintenance and fueling with appropriate control measures for runon and runoff; and
    - Arranging for regular hazardous waste removal to minimize onsite storage.

Hazardous materials at the dam settings could include creosote-treated wood staves, asbestos, batteries, transformers, bearing and hydraulic control system oils, oil storage tanks, mercury light switches, and PCBs. In addition, coatings containing heavy metals in the powerhouse and on the exterior surfaces of the steel penstock and air vent pipes, surge tanks, bulkhead gates, and generator gantry crane would require specialized abatement and disposal. The volumes of most of these materials requiring special

disposal (e.g., asbestos insulation and lead-based paint) have not been estimated because they cannot be easily quantified before abatement activities have been conducted.

Removal of Copco 2 Dam would generate an estimated 725 tons of treated wood material (creosote wood staves) that would require transport and disposal. In addition, if it is determined that the Lakeview Bridge just downstream of Iron Gate Dam is not adequate to support construction traffic from the decommissioning activities and needs to be replaced, creosote-treated wood from the bridge would require transport and disposal. Because the Anderson Landfill has an estimated remaining capacity of 4,925,975 cubic yards, the regional landfills in the surrounding counties should be capable of handling the additional generated waste hazardous waste. Licensed contractors would be selected to transport any waste designated as hazardous. The contractors would be required to comply with all hazardous waste laws for transport and disposal of hazardous materials. **With implementation of the HMMP during construction, impacts from the transport, use, and disposal of HTRW from dam removal would be less than significant.**

Facility deconstruction could create a significant hazard to the public or the environment through the abatement and disposal of asbestos and lead-based paint during construction. In addition, as noted under existing conditions, paint coatings on the buildings and structures may have flaked off into the surrounding soil, creating localized areas of soil contamination that would need to be properly excavated and disposed. However, as part of the decommissioning plan, the demolition contract will require evidence be provided to the responsible federal agency prior to issuance of demolition permits that a qualified asbestos and lead-based paint removal contractor/specialist has been procured to remove or otherwise abate asbestos and lead-based paint prior to or during demolition activities in accordance with federal, state, and local regulations. In addition, evidence will be provided to the responsible federal agency that the demolition contract provides for construction contracts and/or land/building leases, provisions shall be included requiring continuous compliance with all applicable government regulations and conditions related to hazardous materials and waste management. **Therefore, impacts associated with abatement and disposal of asbestos and lead-based paint would be less than significant.**

Facility deconstruction could create a significant hazard to the public or the environment through the accidental release of hazardous materials into the environment during construction. Construction equipment would require the use of hazardous materials (e.g., diesel and gasoline fuels, hydraulic oil). Restoration activities under the Proposed Action would require trucks for hauling equipment and raw materials including spawning-size pea gravel, aircraft for applying hydromulch, discing equipment, backhoes, and other equipment. Fuels, oils, and other hazardous materials used during construction could be accidentally released within construction, staging, and access areas through spills, fueling, and equipment repair.

As part of the decommissioning plan, the contractor will be required to prepare and implement a worker Health and Safety Plan (HASP) prior to the start of construction activities. The HASP will, at a minimum, identify the following:

- All contaminants that could be encountered during excavation activities
- All appropriate worker, public health, and environmental protection equipment and procedures
- Proper housekeeping and BMP procedures to prevent spills
- Emergency response procedures
- Most direct route to a hospital
- Site Safety Officer

The plan will require documentation that all workers have reviewed and signed the plan**.**

With implementation of the HMMP and the HASP during construction of the Proposed Action, impacts from the accidental introduction of hazardous materials would be less than significant.

Removal of Iron Gate Reservoir would require the relocation of the Yreka water supply pipeline, which could create a significant hazard to the public or the environment through the accidental release of hazardous materials into the environment during construction. The existing water supply pipeline for the City of Yreka passes under the Iron Gate Reservoir and will have to be relocated prior to the decommissioning of the reservoir to prevent damage from deconstruction activities or increased water velocities once the reservoir has been drawn down. The pipeline will either be suspended from a pipe bridge across the river near its current location, or rerouted along the underside of the Lakeview Bridge just downstream of Iron Gate Dam. Construction equipment used for the relocation would require the use of hazardous materials (e.g., diesel and gasoline fuels, hydraulic oil). Fuels, oils, and other hazardous materials used during construction could be accidentally released within construction, staging, and access areas through spills, fueling, and equipment repair. An HMMP and HASP would be prepared, as described above. **With implementation of the HMMP and the HASP during construction of the Proposed Action, impacts from the accidental introduction of hazardous materials during the pipeline relocation would be less than significant.**

Drawdown of the reservoirs would require removal of recreational facilities currently located on the banks of the existing reservoirs. The existing recreational facilities provide camping and boating access for recreational users of the reservoirs. Once the reservoirs are drawn down, these facilities will be removed. Construction equipment used for the relocation would require the use of hazardous materials (e.g., diesel and gasoline fuels, hydraulic oil). Fuels, oils, and other hazardous materials used during construction could be accidentally released within construction, staging, and access areas through spills, fueling, and equipment repair. An HMMP and HASP would be prepared, as described above. **With implementation of the HMMP and the HASP during construction of the Proposed Action, impacts from the accidental introduction of**

hazardous materials during the removal of the recreational facilities would be less than significant.

Keno Transfer

The transfer of the Keno Facility to DOI could result in affects to HTRW. The Keno Transfer would result in a transfer of ownership of the facility to DOI. There would be no changes in operations or land use of the Keno Facility with the Keno Transfer. In addition, the EDR search did not identify any sites of concern related to HTRW that would change ownership under the Keno Transfer. Due diligence would be required prior to the Keno Transfer to ensure that any hazardous or toxic wastes and materials present on the properties are identified and fully disclosed. Should any be discovered, proper management would be necessary for PacifiCorp or DOI to manage the materials. **Therefore, the implementation of the Keno Transfer would result in no change from existing conditions.**

East and West Side Facilities

The decommissioning of the East and West Side Facilities could have adverse effects in terms of toxics and hazards. Decommissioning of the East and West Side canals and hydropower facilities of the Link River Dam by PacifiCorp as a part of the Klamath Hydroelectric Settlement Agreement (KHSA) will redirect water flows currently diverted at Link River Dam into the two canals, back in to Link River. Following decommissioning of the facilities there will be no change in outflow from Upper Klamath Lake or inflow into Lake Ewauna. Appropriate health and safety plans would be created to limit the potential of toxic releases during decommissioning. **Therefore, there would be less than significant effects from the decommissioning activities.**

KBRA

The following KBRA programs would entail construction, and therefore could result in impacts related to HTRW:

- Phases I and II Fisheries Restoration Plans
- Fisheries Reintroduction and Management Plan
- Wood River Wetland Restoration Project
- On-Project Plan
- Water Use Retirement Program
- Fish Entrainment Reduction

Construction activities associated with the KBRA programs could create a hazard to the public or the environment through the transport, use, or disposal of hazardous materials encountered during construction. Exact locations and construction plans have not yet been determined for the KBRA construction activities. Impacts related to creating a hazard through routine transport, use, and disposal of hazardous materials would be comparable to those described above for the Proposed Action. The potential for encountering contamination during construction activities for KBRA programs and the extent and frequency of excavation, transport, and disposal are unknown. At the time of

implementation of KBRA programs, the entity acting as the surrogate for KBRA would follow environmental compliance guidelines with regards to applicable toxic and hazardous material laws. These construction actions would not be in the same location or occur at the same time as the hydroelectric facility removal actions. As a result, KBRA construction actions would not contribute to the potential hazardous material effects of facility removal actions. **Therefore, impacts from hazardous materials encountered during construction for KBRA would be less than significant.**

Construction activities associated with the KBRA programs could create a significant hazard to the public or the environment through the accidental release of hazardous materials during construction activities. Construction could require the use of equipment that use hazardous materials (e.g., fuels and oils) and an accidental release of these hazardous materials could occur. BMPs described in the affected environment would reduce any likelihood of accidental release. As noted above, at the time of implementation of KBRA programs, the entity acting as the surrogate for KBRA would follow environmental compliance guidelines with regards to applicable toxic and hazardous material laws. These construction actions would not occur in the same place or at the same time as the hydroelectric facility removal actions. As a result, these actions would not contribute to the effects of facility removal actions. **With implementation of standard BMPs during construction for the KBRA, impacts from the accidental introduction of hazardous materials would be less than significant.**

Alternative 3: Partial Facilities Removal of Four Dams

The Partial Facilities Removal of Four Dams Alternative could create a significant hazard to the public or the environment through the transport, use, or disposal of hazardous materials encountered during construction or the accidental release of HRTW during construction. Under the Partial Facilities Removal of Four Dams Alternative, certain project features at the Four Facilities would be retained. Impacts related to HTRW for the Partial Facilities Removal of Four Dams Alternative would be the same as that associated with the Proposed Action. Table 2-16 in Chapter 2, Proposed Action and Description of the Alternatives, lists features that would be removed under the Proposed Action, but would remain in the Partial Facilities Removal of Four Dams Alternative that could potentially reduce the amount of hazardous waste requiring abatement or disposal. Although all of the specifically identified powerhouse hazardous materials (transformers, batteries, and insulation) would be removed under both alternatives, some materials that contain hazardous coatings could be retained under the Partial Facilities Removal of Four Dams Alternative and would be stabilized through ongoing maintenance activities (e.g., painted penstocks that are left in place under this alternative would be recoated periodically as maintenance). **With implementation of the HMMP and the HASP during construction, impacts associated with the handling, transport, and disposal of hazardous materials and the accidental release of hazardous materials during construction of the Partial Facilities Removal of Four Dams Alternative would be less than significant.**

Keno Transfer

The effects of the Keno Transfer would be the same as those described for the Proposed Action.

East and West Side Facilities

The effects of the East and West Side Facilities removal would be the same as those described for the Proposed Action.

KBRA

The KBRA would be fully implemented under this alternative. Effects would be the same as the Proposed Action.

Alternative 4: Fish Passage at Four Dams

Under the Fish Passage at Four Dams Alternative, no facilities removal would be conducted. This alternative would include the construction of fish passageways at each of the Four Facilities. Known hazardous materials associated with the facility structures would remain in place and there would be no anticipated handling, transport, or disposal of HTRW.

The Fish Passage at Four Dams Alternative could create a significant hazard to the public or the environment through the accidental release of hazardous materials into the environment during construction. Construction would require the use of hazardous materials (e.g., fuels and oils) within construction areas. The scale of the construction would be much smaller for the construction of the Fish Passage at Four Dams Alternative than it would be under the Proposed Action and Partial Facilities Removal of Four Dams Alternatives. **With implementation of the HMMP and the HASP during construction, impacts from the accidental release of hazardous materials would be less than significant.**

Alternative 5: Fish Passage at J.C. Boyle and Copco 2, Remove Copco 1 and Iron Gate

The Fish Passage at Two Dams Alternative could create a significant hazard to the public or the environment through the transport, use, or disposal of hazardous materials encountered during construction or the accidental release of HRTW during construction. Under the Fish Passage at J.C. Boyle and Copco 2, Remove Copco 1 and Iron Gate Alternative, the Dam Removal Entity would remove the facilities at Copco 1 and Iron Gate Dams. Fish passage facilities would be constructed at J.C. Boyle and Copco 2 Dams. Impacts related to hazardous materials for the Fish Passage at J.C. Boyle and Copco 2, Remove Copco 1 and Iron Gate Alternative would be the same as for the Proposed Action at the Copco 1 and Iron Gate Dams, and would be the same as for the Fish Passage at Four Dams Alternative at J.C. Boyle and Copco 2 Dams. **With implementation of the HMMP and the HASP during construction, impacts associated with the handling, transport, and disposal of hazardous materials and the accidental release of hazardous materials would be less than significant.**

3.21.4.4 Mitigation Measures

Mitigation Measure by Consequence Summary

Impacts associated with hazardous materials under each of the alternatives would be less than significant with the implementation of the HMMP and HASP; therefore, no mitigation measures would be required.

Mitigation Measures Associated with Other Resource Areas

Construction of new recreation facilities could release hazardous materials. Mitigation measure REC-1 would create a plan to develop recreational facilities and access points along the newly formed river channel between J.C. Boyle Reservoir and Iron Gate Dam. Recreation facilities, such as campgrounds and boat ramps, currently located on the edge of the reservoir would need to be replaced in appropriate areas near the new river channel once the reservoir is removed. Construction equipment used for the relocation would require the use of hazardous materials (e.g., diesel and gasoline fuels, hydraulic oil). Fuels, oils, and other hazardous materials used during construction could be accidentally released within construction, staging, and access areas through spills, fueling, and equipment repair. An HMMP and HASP would be prepared, as described above. **With implementation of the HMMP and the HASP, impacts from the accidental release of hazardous materials during construction of new recreation facilities would be less than significant.**

3.21.5 References

Dean, R. 2011. Waste Management Unit Manager, Siskiyou County Environmental Health Division. Personal communication with Jennifer Jones, CDM, on March 30, 2011

Environmental Data Resources, Inc. (EDR). 2010a. EDR DataMap™ Corridor Study John C Boyle Powerhouse, Keno, OR 97627, Inquiry Number: 2917973.1s. November 11.

EDR. 2010b. EDR DataMap™ Corridor Study Copco Reservoir to the Iron Gate Dam, Hornbrook, CA 96044, Inquiry Number: 2917975.1s. November 11.

EDR. 2011. EDR DataMap™ Corridor Study Klamath River, Keno, OR 97627, Inquiry Number: 2956127.1s. January 6.

Hepler, T. 2010. Reclamation. Written communication with Scott Wright, River Design Group, on December 23, 2010.

U.S. Environmental Protection Agency (USEPA). 2011. USEPA website: Frequent Questions: Coal Combustion Residues (CCR) - Proposed Rule. Available at: http://www.epa.gov/epawaste/nonhaz/industrial/special/fossil/ccr-rule/ccrfaq.htm